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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,693	11/28/2001	Ho-Seop Jeong	053933-5016	8475

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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,693

Applicant(s)

JEONG ET AL

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This action, dated July 12, 2004, is in response to Applicant's amendment, filed June 3, 2004. Claims 1-19 and 21-23 are pending. Claim 20 has been cancelled.

Drawings

1. Corrected drawings were received on June 3, 2004. These drawings are acceptable.

Claim Objections

2. Claim 1, 2, 10 and 17 are objected to because of the following informalities:
 - a. On line 3 of claim 1, replacing "to reflecting" with -to reflect— is suggested.
 - b. On line 3 of claims 2 and 17, inserting -being— before "moved" is suggested.
 - c. On line 3 of claim 10, replacing "reflecting element" with -reflective element— is suggested to make the name of the element consistent with dependent claims 12, 15 and 23.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. Claims 1, 2, 5-7, 16, 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij et al (hereafter Opheij) (US 5,712,841) in view of Oohchida et al (hereafter Oohchida) (US 6,584,060).

In regard to claim 1, Opheij discloses an optical pickup device, comprising; a lead frame package (Figs. 1 and 2, element 3) having a sub-mount (Fig. 2, element 9), a laser source (Fig. 2, element 7) mounted on said sub-mount to emit a laser beam, a reflective element (Fig. 2, element

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27) to reflect said beam, a transmission-type refraction grating (Fig. 2, element 29) to divide said beam into a plurality of beams including a main beam and two sub beams which are incident to an optical medium (Fig. 3, element 43 and Col. 4, lines 55-57), and an optical element (Fig. 2, element 25) to diffract the beams reflected from an optical medium (Col. 4, line 62-Col. 5, line 4), said lead frame package having an opening (Figs. 1 and 2, element 31); and a detecting unit (Figs. 1 and 2, elements 17, 19 and 21) having a substrate (Figs. 1 and 2, element 17) and a photo detector (Figs. 1 and 2, element 21) mounted on said substrate, said substrate located external to said lead frame package (Figs. 1 and 2).

In regard to claim 6, Opheij discloses an optical pickup device, comprising: a lead frame package (Figs. 1 and 2, element 3) having a sub-mount (Fig. 2, element 9), a light source (Fig. 2, element 7) mounted on said sub-mount and emitting a laser beam, a transmission-type diffraction grating element (Fig. 2, element 29) dividing said beam into a main and two sub beams which are incident to an optical medium (Fig. 3, element 43 and Col. 4, lines 55-57), and an optical element (Fig. 2, element 25) diffracting said beams reflected from said optical medium (Col. 4, line 62-Col. 5, line 4), said lead frame package having an opening (Figs. 1 and 2, element 31); and a detecting unit (Figs. 1 and 2, elements 17, 19 and 21) having a substrate (Figs. 1 and 2, element 17) and a photo detector (Figs. 1 and 2, element 21) mounted on said substrate, said substrate located external to said lead frame package (Figs. 1 and 2).

In regard to claim 16, Opheij discloses an optical pickup device, comprising: a lead frame package (Figs. 1 and 2, element 3) having a sub-mount (Fig. 2, element 9), a light source (Fig. 2, element 7) mounted on said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Fig. 3, element 43 and Col. 4, lines 55-57), and an optical element (Fig. 2, element 25) diffracting said beams reflected from said optical medium (Col. 4, line

62-Col. 5, line 4), said lead frame package having an opening (Figs. 1 and 2, element 31); and a detecting unit (Figs. 1 and 2, elements 17, 19 and 21) having a substrate (Figs. 1 and 2, element 17) and a photo detector (Figs. 1 and 2, element 21) mounted on said substrate, said substrate located external to said lead frame package (Figs. 1 and 2).

In regard to claim 21, Opheij discloses a process for manufacturing an optical pickup device, comprising the steps of: providing a lead frame package (Figs. 1 and 2, element 3) having a sub-mount (Fig. 2, element 9), a light source (Fig. 2, element 7) mounted said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Fig. 3, element 43 and Col. 4, lines 55-57), and an optical element (Fig. 2, element 25) diffracting said beams reflected from said optical medium (Col. 4, line 62-Col. 5, line 4), said lead frame package having an opening (Figs. 1 and 2, element 31); providing a detecting unit (Figs. 1 and 2, elements 17, 19 and 21) having a substrate (Figs. 1 and 2, element 17) and a photo detector (Figs. 1 and 2, element 21) mounted on said substrate, said substrate located external to said lead frame package (Figs. 1 and 2); locating said detecting unit within said opening of said lead frame package (Figs. 1 and 2); and fixing said detecting unit to said lead frame package (Col. 4, lines 8-13).

Opheij does not disclose that the optical element to diffract the beams reflected from the optical medium is a hologram optical element. It is noted that the optical element of Opheij (Fig. 2, element 25) diffracts a part of the reflected beams (Col. 4, lines 66-67).

Oohchida discloses an optical element (Fig. 8, element 51) to diffract the beams reflected from an optical medium to a detecting unit (Fig. 8, element 41). Oohchida further discloses that by using a blazed hologram optical element (Fig. 10B), the diffracted returning light is utilized more efficiently and the S/N ratio and reliability are increased (Col. 18, lines 35-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ in the place of the optical element of Opheij the hologram optical element of Oohchida, the motivation being to utilize diffracted return light more efficiently and increase the S/N ratio and reliability.

In regard to claims 2 and 17, Opheij discloses that said detecting unit (Figs. 1 and 2, elements 17, 19 and 21) is disposed at said opening (Figs. 1 and 2, element 31) of said lead frame package, said detecting unit fixed to said lead frame package after being moved to a position to receive said beams diffracted from said hologram optical element (Col. 4, lines 8-13).

In regard to claim 5, Opheij discloses that said reflective element is a mirror (Col. 4, line 31).

In regard to claim 7, Opheij discloses that said detecting unit (Figs. 1 and 2, elements 17, 19 and 21) is disposed at said opening (Figs. 1 and 2, element 31) of said lead frame package, said detecting unit fixed to said lead frame package (Col. 4, lines 8-13).

4. Claims 3, 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida as applied to claims 1, 6 and 16 above, and further in view of Barkan et al (hereafter Barkan) (US 6,637,657).

Opheij discloses the optical pickup devices of claims 1, 6 and 16 having a detecting unit (Figs. 1 and 2, elements 17, 19 and 21). Opheij does not disclose that the detecting unit is a chip-on-board photo diode package.

Barkan discloses that use of a chip-on-board photo diode package for a detecting unit makes the detecting unit smaller and reduces cost (Col. 6, lines 36-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a chip-on-board photo diode package for the detecting unit of Opheij in

view of Oohchida as suggested by Barkan, the motivation to reduce the size and cost of the detecting unit.

5. Claims 4, 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida as applied to claims 1, 6 and 16 above, and further in view of Sakakibara et al (hereafter Sakakibara) (JP 09-213989).

Opheij discloses the optical pickup devices of claims 1, 6 and 16 having a detecting unit (Figs. 1 and 2, elements 17, 19 and 21). Opheij does not disclose that the detecting unit is a flip-chip package.

Sakakibara discloses that use of a flip-chip package for a detecting unit reduces the size of the detecting unit (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a flip-chip package for the detecting unit of Opheij in view of Oohchida as suggested by Sakakibara, the motivation to reduce the size of the detecting unit.

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida as applied to claim 21 above, and further in view of Maeda (US 4,926,036).

Opheij discloses the optical pickup device of claim 21 having a photo detector, moving a detecting unit with respect to a lead frame package, and fixing the detecting unit to the lead frame package (Col. 4, lines 8-13). Opheij does not disclose monitoring a signal obtained by said photo detector during movement of said detecting unit with respect to said lead frame package; and fixing said detecting unit to said lead frame package when said signal is in a predetermined range.

Maeda discloses monitoring a signal obtained by a photo detector during movement of a detecting unit to put the light detector in a predetermined position or range (Col. 2, lines 29-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to monitor a signal obtained from the photo detector of Opheij in view of Oohchida during movement of said detecting unit with respect to said lead frame package as suggested by Maeda; and to fix the detecting unit of Opheij in view of Oohchida to the lead frame package when the signal is in a predetermined range, as suggested by Maeda, the motivation being to accurately position the detecting unit in a position light receiving area.

7. Claims 10, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida and further in view of Yamashita (US 6,363,047).

In regard to claim 10, Opheij discloses an optical pickup device, comprising: a lead frame package (Figs. 1 and 2, element 3) having a sub-mount (Fig. 2, element 9), a light source (Fig. 2, element 7) mounted on the sub-mount and emitting a laser beam, and an optical element (Fig. 2, element 25) to diffract said beam reflected from an optical medium (Fig. 3, element 43 and Col. 4, line 62-Col. 5, line 4), said lead frame package having an opening (Figs. 1 and 2, element 31); and a detecting unit (Figs. 1 and 2, elements 17, 19 and 21) having a substrate (Figs. 1 and 2, element 17) and a photo detector (Figs. 1 and 2, element 21) mounted on said substrate, said substrate located external to said lead frame package (Figs. 1 and 2). Opheij does not disclose that the optical element to diffract the beams reflected from the optical medium is a hologram optical element. Opheij also does not disclose a reflective element to direct said beam onto the optical medium. It is noted that the optical element of Opheij (Fig. 2, element 25) diffracts a part of the reflected beams (Col. 4, lines 66-67).

Oohchida discloses an optical element (Fig. 8, element 51) to diffract the beams reflected from an optical medium to a detecting unit (Fig. 8, element 41). Oohchida further discloses that

by using a blazed hologram optical element (Fig. 10B), the diffracted returning light is utilized more efficiently and the S/N ratio and reliability are increased (Col. 18, lines 35-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ in the place of the optical element of Opheij the hologram optical element of Oohchida, the motivation being to utilize diffracted return light more efficiently and increase the S/N ratio and reliability.

Yamashita discloses a lead frame package (Fig. 8, element 30) having a reflecting element (Fig. 8, element 31) to direct a laser beam onto an optical medium. Yamashita discloses that by using the reflecting element, the optical head device is made more compact (Col. 8, lines 34-38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the lead frame package of Opheij in view of Oohchida the reflecting element of Yamashita, the motivation being to make the optical head device more compact.

In regard to claim 11, Opheij discloses that said detecting unit (Figs. 1 and 2, elements 17, 19 and 21) is disposed at said opening (Figs. 1 and 2, element 31) of said lead frame package, said detecting unit fixed to said lead frame package (Col. 4, lines 8-13).

In regard to claim 15, Yamashita discloses that said reflective element is a mirror (Col. 8, line 34).

8. Claims 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida and in further view of Yamashita as applied to claim 10 above, and further in view of Kouno (US 6,404,709).

Opheij discloses the optical pickup devices of claim 10 having a transmission-type diffraction grating element (Fig. 2, element 29) mounted within a lead frame package (Figs. 1 and

2, element 3) and dividing a laser beam into a plurality of beams including a main and two sub beams which are incident to an optical medium from the lead frame package (Col. 4, lines 55-57). The reflective element of Opheij in view of Oohchida and in further view of Yamashita directs the laser beam to an optical medium. Opheij in view of Oohchida and in further view of Yamashita does not disclose a reflection-type diffraction grating element dividing said beam emitted from said light source into a plurality of beams including main and two sub beams reflected toward said optical medium.

Kouno discloses a reflection-type diffraction grating element (Fig. 1, element 15b) mounted within a lead frame package (Fig. 1, elements 10 and 100) and dividing a beam emitted from a light source (Fig. 1, element 41) into a plurality of beams including main and two sub beams reflected toward said optical medium from the lead frame package (Col. 5, lines 15-22 and 54-57). Kouno (Col. 5, lines 15-22 and 54-57) further discloses use of the reflection-type diffraction grating element in place of transmission-type diffraction grating element (Fig. 1, element 15a) and a reflective element (Fig. 1, element 16).

Therefore, a reflection-type diffraction grating element was an art-recognized equivalent to a transmission-type diffraction grating element with a reflective element at the time of the invention for the purpose of separating a beam into plural beams to be emitted from a lead frame package toward the same direction and one of ordinary skill would have found it obvious to use either one including the reflection-type diffraction grating element of Kouno for separating and directing the beam of Opheij in view of Oohchida and in further view of Yamashita in the manner suggested by Opheij in view of Oohchida and in further view of Yamashita. It is noted that for the reflection-type diffraction grating element to emit the plural beams from a lead frame package, the reflection-type diffraction grating element must be mounted within the lead frame package.

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9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida and in further view of Yamashita as applied to claim 10 above, and further in view of Barkan et al (hereafter Barkan) (US 6,637,657).

Opheij discloses the optical pickup devices of claims 1, 6 and 16 having a detecting unit (Figs. 1 and 2, elements 17, 19 and 21). Opheij does not disclose that the detecting unit is a chip-on-board photo diode package.

Barkan discloses that use of a chip-on-board photo diode package for a detecting unit makes the detecting unit smaller and reduces cost (Col. 6, lines 36-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a chip-on-board photo diode package for the detecting unit of Opheij in view of Oohchida as suggested by Barkan, the motivation to reduce the size and cost of the detecting unit.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Oohchida and in further view of Yamashita as applied to claim 10 above, and further in view of Sakakibara et al (hereafter Sakakibara) (JP 09-213989).

Opheij discloses the optical pickup devices of claims 1, 6 and 16 having a detecting unit (Figs. 1 and 2, elements 17, 19 and 21). Opheij does not disclose that the detecting unit is a flip-chip package.

Sakakibara discloses that use of a flip-chip package for a detecting unit reduces the size of the detecting unit (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a flip-chip package for the detecting unit of Opheij in view of Oohchida as suggested by Sakakibara, the motivation to reduce the size of the detecting unit.

Response to Arguments

11. Applicant's arguments with respect to claims 1-19 and 20-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

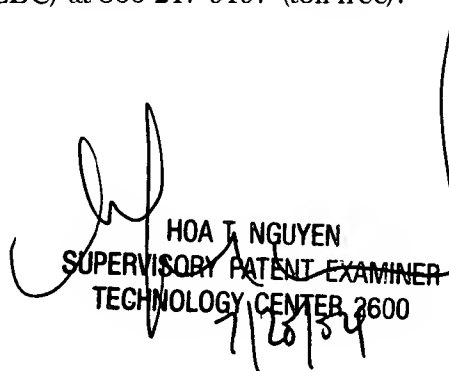
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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